INTERNATIONAL STANDARD ISO 3208

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Road vehicles — Evaluation of protrusions inside passenger cars

Véhicules routiers — Évaluation des saillies à l'intérieur des voitures particulières

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FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3208 was drawn up by Technical Committee ISO/TC 22, *Road vehicles*, and circulated to the Member Bodies in July 1973.

It has been approved by the Member Bodies of the following countries :

Austria	Ireland	Spain
Belgium	Japan	Switzerland
Bulgaria	Netherlands	Thailand
Czechoslovakia	New Zealand	Turkey
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The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Italy
U.S.A.

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Road vehicles — Evaluation of protrusions inside passenger cars

1 SCOPE

This International Standard specifies a test method for the determination of the significance of the protrusion of controls and other devices situated inside a passenger car and also of their ability to retract, compress or become detached under the effect of a force.

In addition it specifies the apparatus to be used for this purpose.

2 FIELD OF APPLICATION

This International Standard is applicable only to those controls and other devices such as buttons, levers, etc., in rigid material (at least 50 IRHD[1)] hardness) forming a protrusion and situated in the reference zone defined in the annex.

3 REFERENCE

ISO 48, *Vulcanized rubbers — Determination of hardness (Hardness between 30 and 85 IRHD).*

4 TEST APPARATUS

4.1 General

This apparatus is intended to measure the significance of protrusions and the force necessary to cause them to retract, compress or become detached. These two measurements may also be made by two separate devices.

4.2 Description

The protrusion measurement device shall consist of a 165 mm diameter hemispherical headform within which shall be a 50 mm diameter flat-ended sliding piston (see the figure). The force application device shall have a system of force measurement.

4.2.1 The relative positions of the flat front face of the piston and the leading edge of the headform shall be shown on a graduated scale on which a moving index shall retain the maximum reading when the device is removed from the test specimen. The range of measurement shall be at least 30 mm graduated in 0,5 mm; reference protrusion values may be marked on the scale as desired.

4.2.2 The apparatus shall be provided with a system of measuring the angle of application relative to the horizontal. The range shall be 0 to 90° with an accuracy of 1°.

4.2.3 The application of the force shall be made through the piston independently of the headform. This force shall be recorded on a scale graduated from 0 to 50 daN; the accuracy of measurement shall be at least 0,5 daN.

4.3 Calibration

4.3.1 *Protrusion scale*

Present the device to a flat surface such that the axis of the device is normal to the surface.

With the flat front face of the piston in contact with the surface, zero the protrusion scale.

Insert a 10 mm distance piece between the piston face and the surface and check that the protrusion scale shows this reading.

4.3.2 *Force scale*

Check the force scale by the application to the piston of forces of 30 and 40 daN.

5 TEST PROCEDURE

This procedure is applicable only to protrusions in the zone called "Reference zone". (See definition in the annex).

5.1 Measurement of protrusions

Withdraw the piston to form a recess in the headform and set the moving index in contact with the piston.

Apply the device to the protrusion to be measured in such a way that the headform is in contact with the maximum possible surface area of surrounding material, with a force not exceeding 2 daN.

Push the piston forward until it comes into contact with the protrusion to be measured and read the protrusion measurement on the scale.

Orient the headform so as to obtain the maximum protrusion. Read the value of this protrusion.

1) See ISO 48.

5.2 Measurement of the force of retraction, compression or detachment

Set the headform as indicated in 4.1 so as to obtain the maximum protrusion. Apply a continuous and progressive force on the piston. Check that before the reference load is reached, the protrusion is retracted, compressed or detached and that the length of the remaining protrusion is less than the reference value.

5.3 Controls in close proximity

If two or more controls are located sufficiently close together to be simultaneously contacted by the piston or headform they shall be treated as follows :

5.3.1 Multiple controls which can be accommodated simultaneously within the headform recess shall be treated as one protrusion and the total force for compressing all of them shall not exceed the reference force.

5.3.2 Where normal testing is prevented by other controls coming into contact with the headform, these shall be removed and testing carried on without them. They shall then be replaced and tested in turn with other controls removed as required to facilitate this.

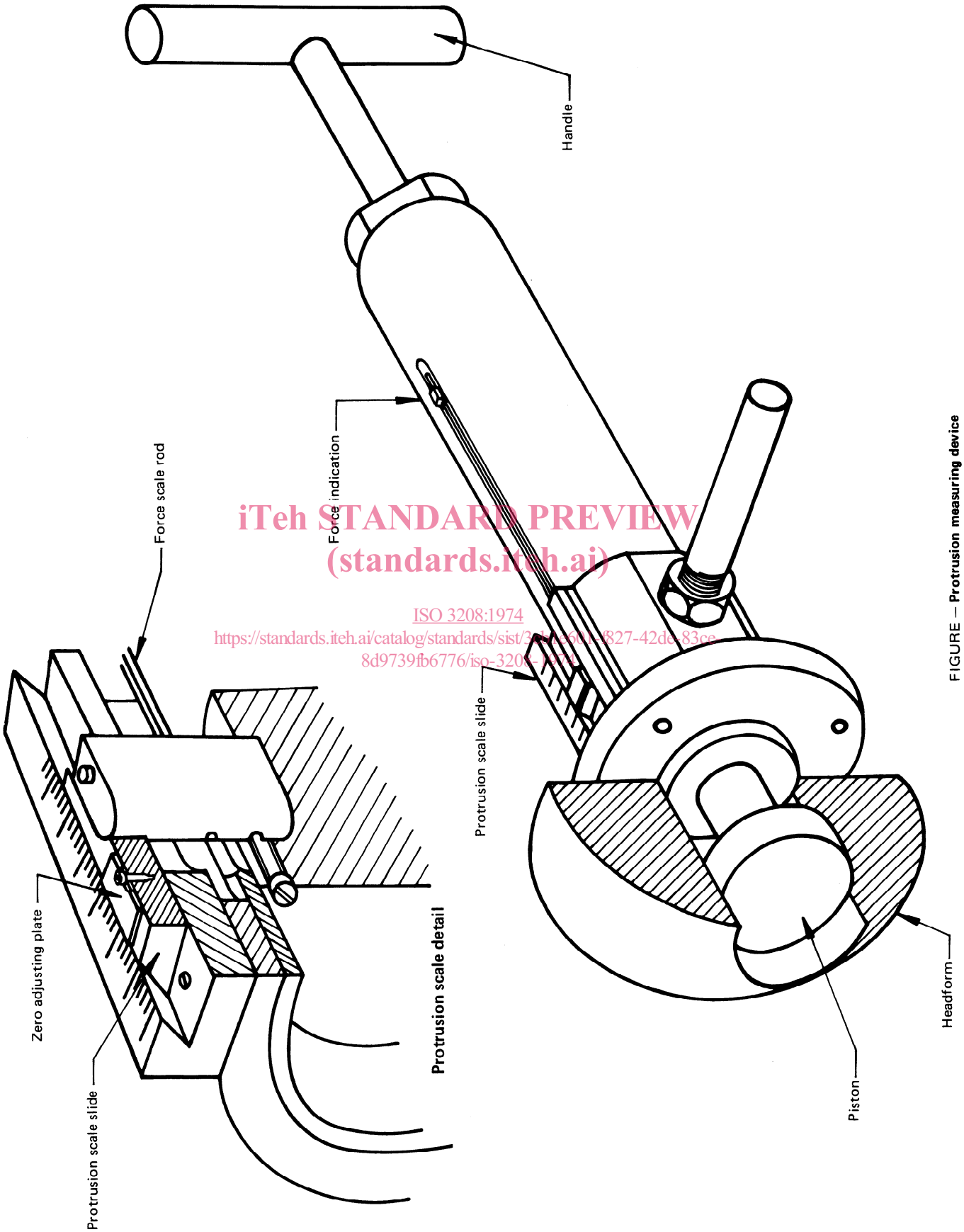

FIGURE — **Protrusion measuring device**

ANNEX

DETERMINATION OF THE REFERENCE ZONE

A.1 "Reference zone" means the head-impact zone as defined in A.2, except :

A.1.1 the area bounded by the forward horizontal projection of a circle circumscribing the outer limits of the steering control, increased by a peripheral band 127 mm in width; this area is bounded below by the horizontal plane tangential to the lower edge of the steering control when the latter is in the position for driving straight ahead;

A.1.2 the part of the surface of the instrument panel comprised between the edge of the area specified in A.1.1 and the nearest inner side wall of the vehicle; this part of the surface is bounded below by the horizontal plane tangential to the lower edge of the steering control;

A.1.3 the windscreen side pillars.

A.2 The head-impact zone comprises all the non-glazed surfaces of the interior of a vehicle which are capable of entering into static contact with a spherical head 165 mm in diameter that is an integral part of a measuring apparatus whose dimension from the pivotal point of the hip to the top of the head is continuously adjustable between 736 mm and 840 mm.

A.3 The aforesaid zone shall be determined by the following procedure or its graphic equivalent :

A.3.1 The pivotal point of the measuring apparatus shall be placed as follows for each seating position for which the manufacturer has made provision :

a) in the case of sliding seats;

1) at the H point (point H is a reference point fixed by ISO . . .[1]). The position of point H with respect to the seat shall be specified by the manufacturer. This reference point, generally called "Hip point", represents the trace of the horizontal turning axis of the femur on the plane of symmetry of the seat) and

2) at a point situated horizontally 127 mm forward of the H point and at a height resulting from the variation in the height of the H point caused by a forward shift of 127 mm or at a height of 19 mm.

b) in the case of non-sliding seats, at the H point of the seat considered.

A.3.2 For each value of the dimension from the pivotal point to the top of the head which the test apparatus and the interior dimensions of the vehicle jointly allow, all the points of contact situated below the lower edge of the windscreen and forward of the H point shall be determined.

A.3.3 If there is no point of contact in the case of adjustment within the above limits, with the test apparatus vertical, possible points of contact shall be determined by pivoting the measuring apparatus forwards and downwards through all arcs in vertical planes as far as 90° for the vertical plane perpendicular to the longitudinal vertical plane of the vehicle and passing through the H point.

A.4 The points of contact are the points at which the head of the apparatus touches parts of the interior of the vehicle. The downward movement shall be limited to a position where the head is tangential to a horizontal plane situated 25,4 mm above the H point.

1) While awaiting the publication of an International Standard dealing with this subject, verification of the position of point H can be made in accordance with the information given in annex 5 of document E/ECE/324 Rev.1/Add.20 of the Economic Commission for Europe of the United Nations. This document is entitled : Agreement concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipment and parts — done at Geneva on 20 March 1958 — Addendum 20 : Regulation No. 21 to be annexed to the Agreement : Uniform provisions concerning the approval of vehicles with regard to their interior fittings.

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